REMARKS/ARGUMENTS

1. Claim Amendments

The Applicant has amended claims 1 and 10 and canceled claim 20. Applicant respectfully submits no new matter has been added. Accordingly, claims 1-19 and 21 are pending in the application. Favorable reconsideration of the application is respectfully requested in view of the foregoing amendments and the following remarks.

2. Claim Rejections – 35 U.S.C. § 103 (a)

Claims 1-7, 10-16, and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's background of invention, in view of Easton (US 5,764,687) Applicant has amended Claims 1 and 10 to more fully distinguish the present invention from Easton. Claim 20 has been canceled.

Examiner states, in the Final Office Action:

> Examiner asserts that Applicant in claim 1, states: truncating the despread data symbols provided from the RAKE unit to obtain truncated data symbols represented by a second number of bits, wherein the second number of bits are selected as the least significant bits. From the above passage it is not clear whether the LSBs are the removed bits from a set of data symbols or they are the remaining bits after truncation has been performed. Therefore, examiner has given the claim its broadest reasonable interpretation.

Applicant has amended claims 1 and 10 to overcome the rejection. The invention, as amended, provides a method of receiving radio signals in which the number of bits used to represent the despread data symbols that are output from the fingers of the RAKE, each despread data symbol being represented by a first number of bits, can be reduced in such a way that the loss of soft information is minimized. The problem being solved by the present invention is the avoidance of saturated RAKE output values. The saturation of RAKE output values can be thought of as a kind of MSB truncation. The present invention solves this problem by measuring the power of the RAKE output. It then scales, accordingly, the RAKE output before the saturation unit

(which corresponds to truncating the least significant bits (LSBs) but not truncating the most significant bits (MSBs)). In essence, the present invention involves truncating the LSB bits to avoid saturation. In a further embodiment, after measuring the power of the RAKE output, it can adjust the analog gain value to reduce the dynamics of the signal to avoid saturation.

More specifically, the objective of the present invention is achieved in that the method truncates a despread data symbol representing a first number of bits, which despread data symbol is provided from the RAKE unit, to obtain a truncated data symbol represented by a second number of bits (being the LSB), said second number being smaller than said first number. The truncated data symbol (being the LSB) is then saturated to obtain a saturated data symbol and this saturated data symbol replaces the truncated data symbol. The saturated data symbol will have the highest value that can be represented by the second number of bits (the LSB), if the value of the despread data symbol from which that truncated data symbol was obtained is larger than said highest value. The saturated data symbol will have the lowest value that can be represented by the second number of bits (the LSB), if the value of the despread data symbol from which that truncated data symbol was obtained is less than the lowest value. The method level adjusts the despread data symbols provided from the RAKE unit in dependence of said despread data symbols, so that overflow for the truncated data symbols is prevented.

As can be seen, the use of truncation and saturation reduces the number of bits needed to represent the data symbols from the fingers of the RAKE. However, because, conventionally, the level adjustment is performed before the RAKE unit, the output levels from the individual fingers may differ considerably from each other and there would be, with the use of truncation and saturation alone, a risk of overflow for one or more of the data symbols resulting in loss of information in the truncation and saturation process. This problem is solved when the truncation and saturation is combined with the further level adjustment as in the present invention, so that the level of the symbols provided from the RAKE is adjusted in dependence of the level of the saturated data symbols to prevent overflow.

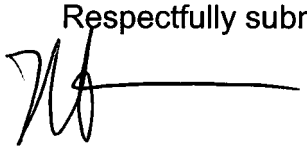
Easton, in combination with the background of the invention, fail to disclose the subject matter of the present invention. Further, as noted above, saturation in a conventional RAKE architectures cause, in effect, a truncation of the MSB. Inasmuch as the MSB carry the most important parts of a message, there is a need to despread data symbols in such a way that the loss of soft information is minimized. Hence, the present invention truncates and saturates the LSBs and the non-truncated and non-saturated bits in the present invention are the MSBs. As can be seen, the truncation and saturation of the LSBs, not the MSBs, is a key feature claimed in the present invention and such feature is not merely a design choice.

CONCLUSION

In view of the foregoing remarks, the Applicant believes all of the claims currently pending in the Application to be in a condition for allowance. The Applicant, therefore, respectfully requests that the Examiner withdraw all rejections and issue a Notice of Allowance for all pending claims.

The Applicant requests a telephonic interview if the Examiner has any questions or requires any additional information that would further or expedite the prosecution of the Application.

Respectfully submitted,



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